REMARKS/ARGUMENTS

In the Final Office Action mailed August 2, 2005, claim 109 was rejected under 35 U.S.C. 102(b) over U.S. Patent No. 5,593,130 to *Hansson*. The claim is amended to specify that the method of making an elastomeric structure includes forming a deflectable membrane integral to a first elastomeric layer that is deflected to close the flow channel in response to an actuation force from a recess in a second elastomeric layer. The valve configuration in *Hansson* did not close a flow channel this way.

The amendment also adds claims 292 and 293, which describe additional methods of making an elastomeric structure. Claim 292 includes "microfabricating a second elastomeric layer having a recess formed therein that forms a control channel, wherein a long axis in the control channel is substantially parallel to a bottom surface of the second elastomeric layer". Support for this step can be found in Figure 4, which shows a control line 32 having a long axis that runs substantially parallel to the bottom surface of elastomeric layer 22.

Claim 293 includes "microfabricating a first elastomeric layer having a plurality of recesses formed therein that form a plurality of flow channels, wherein a plurality of deflectable membranes are formed integral with the first elastomeric layer". Support for this step can be found, among other places, in Figures 26A-B and the specification, page 36, lines 1–6, describing a plurality of flow lines 30A-C and deflectable membranes 25A-C formed integral to a first elastomeric layer. The claim also include "microfabricating a second elastomeric layer having a recess formed therein that forms a control channel, wherein the plurality of deflectable membranes are deflected in response to an actuation force from the control channel". Support for this step can also be found, among other places, in Figures 26A-B and the specification, page 36, lines 1–6, describing control line 32 passing over flow channels 30A-B and shutting off flows through the flow channels by depressing membranes 25A-C.

The control channel formed substantially parallel to the bottom surface of the second elastomeric layer in claim 292, and the control channel deflected the plurality of deflectable membranes in claim 293, are neither described nor suggested by *Hansson*. Claims

109, and 292-293 are pending in the application. Allowance of these claims is respectfully requested in light of the following remarks.

A. *Hansson* Fails to Describe the Control Channel Structure of the Invention

The control channels that open and close flow channels in the present invention have a completely different configuration than *Hansson's* cylindrical pressure ducts. *Hansson* described a cylindrical pressure duct 8 formed in an elastomeric layer 3 (*see* col. 2, lns. 41-47). The top of the duct 8 was defined by flexible valve membrane 7, which was integral to layer 3 (*see* Fig. 2 and col. 2, lns. 41-44). The membrane 7 also defined a portion of the bottom of flow channel 5, 5' and was positioned to face valve seat 6, which was formed in a second elastomeric layer that defined the top of the flow channel (*see* Fig. 2 and col. 2, lns. 38-44).

Hansson stopped fluid flow between flow channel sections 5 and 5' by pumping compressed air into the pressure duct 8, which caused the membrane to bulge upward and seal against the valve seat 6 (*see* col. 3, lns. 16-20). The valve was reopened by letting the compressed air escape from duct 8, causing membrane 7 to fall back to the bottom of the flow channel (*see* col. 3, lns. 46-57).

In contrast, the control channels of the present invention are configured to extend more horizontally across an elastomeric layer than push vertically through it. Among other advantages, this configuration can allow the control channel simultaneously open and close multiple flow channels that cross the path of the control channel. *Hansson's* vertically aligned cylindrical pressure duct 8 was configured only to apply upward pressure on a single flow channel.

Differences between the present control channels and *Hansson's* cylindrical pressure ducts are reflected in claim 109, which includes elements that are not described in the reference. For example, claim 109 includes a first elastomeric layer that forms a flow channel, and also has a deflectable membrane that is "formed integral with the first elastomeric layer". The membrane is "deflected to close the flow channel in response to an actuation force from the recess (*i.e.*, control channel) in the second elastomeric layer." In *Hansson*, the deflectable

membrane 7 is formed integral with the layer 3, which has the cylindrical pressure duct 8, but not the flow channel 5, 5'. Thus, a deflectable membrane in *Hansson* is not formed integral with an elastomeric layer that also has a flow channel.

Contrary to the assertion in the Office Action, *Hansson's* flexible valve seat 6 did not describe a deflectable membrane formed in elastomeric layer 2. The valve seat 6 is pressed against a support plate 1 that keeps the valve seat 6 from deflecting (*see* col. 2, lns. 30-34). If the valve seat 6 did deflect, it would not have been able to form a seal with membrane 7 to prevent fluid from flowing between flow channel sections 5 and 5'. If the valve seat 6 were a deflectable membrane, then the valve in *Hansson* would fail to work as described. Furthermore, claim 109 states that the deflectable membrane is deflected to close the flow channel. Even if the valve seat 6 was a deflectable membrane, the operation of the valve in *Hansson* didn't describe valve seat 6 as ever being deflected to close the flow channel 5, 5'. The only membrane that was deflected to close the valve in *Hansson* was membrane 7, which was integral with the layer 3 that did not have a flow channel.

The Office also asserts that the cylindrical pressure duct 8 is a flow channel because compressed air enters and exits the duct as it's actuated. Applicants respectfully reply that equating duct 8 with flow channel 5, 5' indicates a fundamental misunderstanding of the invention in *Hansson*. Cylindrical pressure duct 8 is not used to transport fluid from one point to another like flow channel 5, 5'. Furthermore, *Hansson* did not describe or suggest that the fuction duct 8 to open and close the valve was interchangeable with the function of flow channel 5, 5' to transport fluid.

But even if cylindrical pressure duct 8 could be described as a flow channel, *Hansson* would still not describe every element of claim 109. The claim recites that the deflectable membrane is "deflected to close the flow channel". Even if pressure duct 8 were a flow channel, the deflection of membrane 7 would not prevent the flow of compressed air into or out of the duct. Thus, *Hansson* would still fail to describe all the elements of claim 109. For at least these reasons, claim 109 is allowable over *Hansson*, and withdrawal of the rejection of claim 109 under 35 U.S.C. § 102(b) over *Hansson* is respectfully requested.

B. *Hansson* Fails to Describe Horizontally Aligned Control Channels

New claim 292 describes a method of microfabricating an elastomeric structure that includes a control channel that is substantially parallel to a bottom surface of a second elastomeric layer (*i.e.*, the layer in which the control channel is formed). The vertically aligned cylindrical pressure duct 8 described in *Hansson* has the opposite configuration with the duct being formed perpendicular to the top and bottom surfaces of layer 3 (*see, e.g.*, Figs. 1&2). There was no description or suggestion in the reference to turn the orientation of the duct 8 by 90° to make it substantially parallel with the bottom surface of layer 3. Thus, claim 292 is allowable over *Hansson*, which action is respectfully requested.

C. *Hansson* Fails to Describe A Control Channel Interacting with A Plurality of Membranes

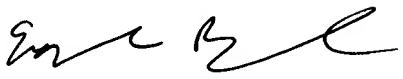
New claim 293 describes a method of microfabricating an elastomeric structure that includes a control channel that deflects a plurality of deflectable membranes in response to an actuation force from the control channel. This element is also neither described nor suggested by the value configuration of *Hansson*. As noted above, *Hansson* described a vertical alignment of the cylindrical pressure duct 8 that pushed a membrane 7 against a flow channel 5, 5' in an adjacent layer 2 at a single point. This configuration would not allow duct 8 to actuate additional membranes in coplanar flow channels of layer 2. Only one flow channel 5, 5' was shown in the elastomeric layer 2. Thus, Hansson did not describe or suggest a control channel that deflects a plurality (*i.e.*, two or more) deflectable membranes. Accordingly, claim 292 is allowable over *Hansson*, which action is respectfully requested.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 303-571-4000.

Respectfully submitted,



Eugene J. Bernard
Reg. No. 42,320

TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, Eighth Floor
San Francisco, California 94111-3834
Tel: 303-571-4000
Fax: 415-576-0300
GB:bhr
60643507 v1